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VARIABLE INDUCTANCE DEVICE

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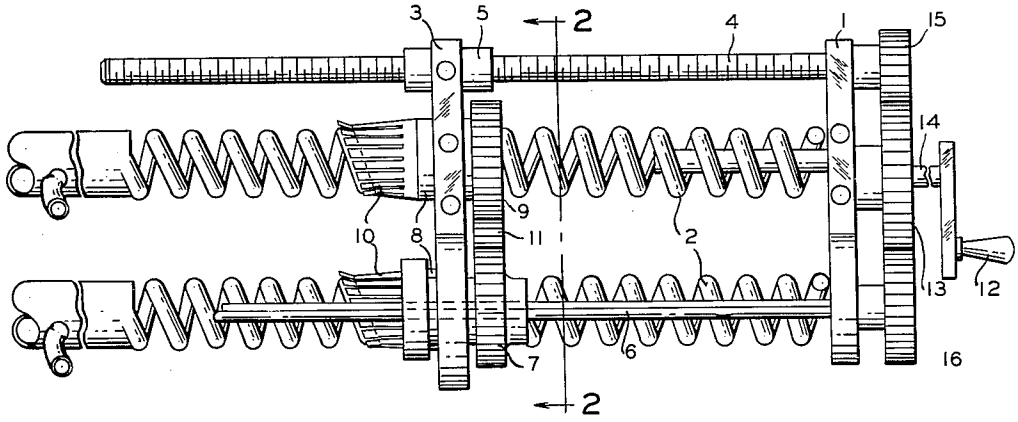


FIG. 1

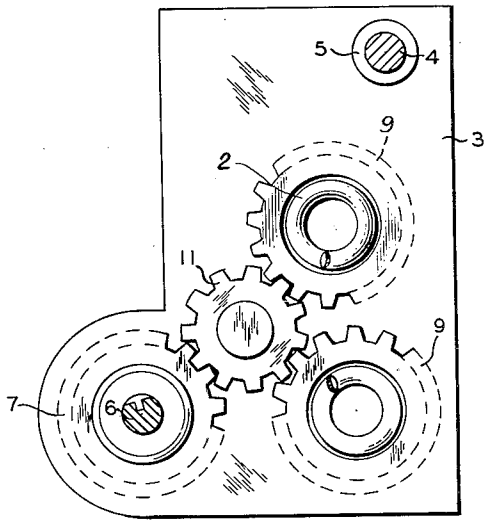


FIG. 2

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VARIABLE INDUCTANCE DEVICE

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5 Claims. (Cl. 171—242)

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The invention relates in general to an electrical contact and in particular to a rotating electrical contact for a shorting bar.

The main objects of the invention are to provide a simple, efficient and compact mechanism for reliably, continuously maintaining a wiping contact with the surface of a helical conductor as a shorting bar is moved longitudinally thereof in tuning operation.

In order to more clearly disclose the construction, operation and use of the invention reference should be had to the accompanying drawings forming part of this application.

Throughout the several figures of the drawings like reference characters designate the same parts in the different views.

In the drawings:

Fig. 1 is a side elevation, showing the shorting block and the control end; and

Fig. 2 is a cross section on line 2—2 of Fig. 1.

A panel, wall or supporting block 1 mounts and supports shafts, gears and lines, as usual and all in well known manner. Two helical conductors 2 are shown. They pass through openings in the usual shorting block 3 which may be moved back and forth along them by a feed screw 4 journaled in block 1 and cooperating with the interiorly threaded sleeve 5 which extends through the shorting block 3. A guide shaft 6 is journaled in block 1 parallel with the feed screw 4. Shaft 6 passes through the shorting block 3 in freely revoluble relation thereto and has splined thereon a gear 7 to rotate therewith. The hub of gear 7 is journaled in the shorting block 3 in a well known manner to travel back and forth therewith while rotating freely therein.

Concentrically journaled within respective openings in block 3 for the respective helical conductors 2 are cylindrical contact carriers 8. These carriers 8 are provided with annular gears 9 at one end and a plurality of longitudinally extending wiping contact fingers 10 at the opposite end. The contact fingers 10 of each cylinder are of progressively increasing length so that the outer free ends which engage the associated helical conductor 2 follow the form of a helical turn and that helical turn is of the same diameter and pitch as each of the several helices of that conductor. Thus, in operative position, the contact fingers 10 of each contact carrier 8 are at all times in full wiping contact with one complete turn of the associated helical conductor 2.

On the shorting block 3 is journaled an idler gear 11 meshing with and driven by gear 7. Gear 11, in turn, meshes with both gears 9 on the contact carriers 8, driving them both in the same direction and at the same rate.

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Feed screw 4, reciprocating the shorting block 3 may be driven through any suitable train of gears by a crank handle 12 on the tuning dial or otherwise conveniently placed. For purposes of clearness, the simplest arrangement of gears for this drive has been shown in the drawings. It comprises a gear 13 fixed to the control shaft 14 meshing both with a gear 15 on the feed screw 4 and a gear 16 fixed to the shaft 6. By rotation of the control shaft 14 for moving the shorting block 3 for tuning, the wiping contacts 10 will be successively drawn over every helical turn, with contact throughout each respective helical turn, as the block passes lengthwise of the helices. The longitudinal movement of the shorting block 3 and the rotation of the contact fingers 10 are both geared to and operated by a single simple control.

It is a very simple matter to select such gear ratios as will give complete synchronization between the movements of the shorting block 3 and the rotary travel of the contact fingers, thereby at all times maintaining wiping contact of all fingers 10 of one of the contact carriers 8 with one turn of the associated helical conductor 2.

It is thought that the construction, operation and use of the invention will be clear from the preceding detailed description.

Many changes may be made in the construction, arrangement and disposition of the various parts of the invention within the scope of the appended claims without departing from the field of the invention, and it is meant to include all such within this application wherein only one preferred form has been illustrated purely by way of example and with no thought or intent to, in any degree, limit the invention thereby.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. In combination, a helical conductor, a shorting block, means for moving said block axially of the helix of said conductor, a wiping contact carried by said shorting block and disposed about said conductor and comprising a plurality of contact fingers provided with contacting portions arranged to follow substantially a helical turn of the same diameter and pitch as the helix of said conductor and in contact with substantially one turn of said conductor, and means for rotating said contact as said block is moved axially and in synchronism with such axial movement so as to maintain contact between said contacting portions and said conductor.

2. In combination, a helical conductor, a short-

ing block, means for moving said block axially of the helix of said conductor, a wiping contact carried by said shorting block and disposed about said conductor and comprising a plurality of contact fingers provided with tips arranged to follow substantially a single helical turn of the same diameter and pitch as each turn of said conductor and in contact with substantially one turn of said conductor, and means for rotating said contact as said block is moved axially so as to maintain contact between said tips and said conductor.

3. In combination, a helical conductor, a shorting block, means for moving said block axially of the helix of said conductor, a wiping contact carried by said shorting block and rotatable relative thereto and disposed about said conductor, and means for rotating said contact as said block is moved axially and in synchronism with such axial movement so that said contact follows a helical path and maintains continuous contact with said helical conductor.

4. In combination, a helical conductor, a shorting block, means for moving said block axially of the helix of said conductor, a wiping contact carried by said shorting block and rotatable relative thereto and disposed about said conductor and means for rotating said contact about said conductor as said block is moved axially so as to maintain continuous wiping contact between said contact and said conductor.

5. In combination, a flat panel, a threaded feed screw journaled perpendicularly through said panel for rotational movement only relative to said panel, a guide shaft parallel to and spaced from said feed screw, also journaled through said panel for rotational movement only relative to said panel, means to rotate said feed screw and guide shaft simultaneously, a shorting block supported

by said feed screw and guide shaft and longitudinally movable relative thereto and parallel to said panel, two stationary helical conductors parallel to and spaced from said feed screw and guide shaft, a tubular contact carrier surrounding each of said helical conductors, said contact carriers being journaled through said shorting block for rotational movement only relative to said block, each of said contact carriers being provided with a plurality of longitudinally disposed wiping contact fingers, each of which fingers is provided with a wiping contact portion, the wiping contact portions of each contact carrier being positioned relative to each other to follow the configuration of a portion of a helix of the diameter and pitch of its associated conductor so that said contact portions may be maintained in contact with a portion of said helical conductor at all times, gear means between the guide shaft and the contact carriers so that said contact carriers are rotated upon rotation of the guide shaft.

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